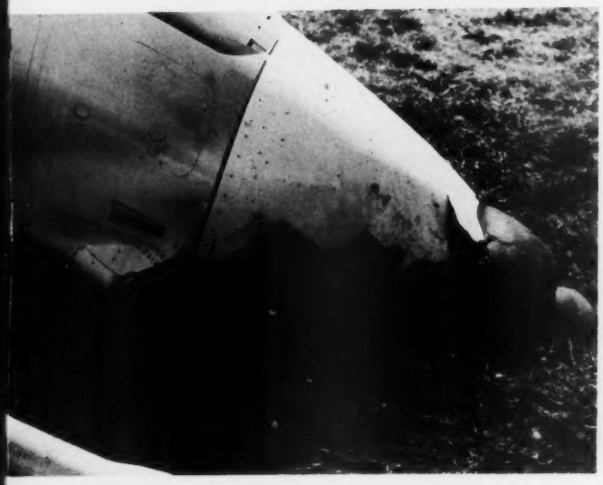
# AVIATION SAFETY REVIEW

This mishap is an example of a pilot who, although meeting minimum qualification criteria, was confronted with a problem that exceeded his proficiency level. Commanders must closely monitor the combination of pilots and assigned missions. Every effort must be exerted to provide that cushion of proficiency necessary to handle unanticipated circumstances. *Mission requirements must be* matched *by pilot proficiency . . .*

# GOT A MATCH?



TWO A-4M aircraft landed at Southwest AFB at the end of the first leg of a cross-country. While the *Skyhawks* were being serviced, the pilots briefed and filed the next leg of their flight. Aircraft start and taxi were uneventful, and the flight was cleared for takeoff.

The flight leader elected to fly wing on this leg, so he commenced his takeoff roll 10 seconds after No. 1 released his brakes. The first *Skyhawk* experienced no problems getting airborne. The second aircraft, after 2000 feet of roll, experienced nosewheel vibrations, followed by failure of the nose tire. Speed at this point was approximately 140 knots. The pilot pulled back on the stick to get airborne, but felt that the aircraft was not responding and decided to abort.

At the moment of tire failure, there was approximately 6800 feet of runway remaining. Maximum braking proved ineffective as the aircraft continued down the runway and through the MA-1A arresting barrier located 145 feet into the overrun. The pilot managed to turn the aircraft enough to miss the ILS localizer gear located 1360 feet into the overrun, but in so doing, struck an approach light stanchion with his left wing. The impact pivoted the aircraft to the left and off the hard surface onto adjacent soft dirt. The nose gear collapsed, and the aircraft stopped as it dropped onto its nose (see photos). There was no fire, and the pilot exited the aircraft uninjured.

Under similar circumstances, pilots have been successful in getting airborne by relieving the weight and drag on the nosewheel with positive aft stick movement, allowing the aircraft to accelerate to flying speed. This pilot did not recall whether he applied enough aft stick to overcome the situation. If he failed to exert enough back pressure, the damaged nosewheel probably prevented acceleration and gave the pilot the sensation of a "heavy nose." Post-accident investigation indicated that there were no flight control malfunctions. Cause of

the nosewheel failure could not be determined.

The pilot had several alternatives which would have made his situation less critical. He could have jettisoned the droptanks, thereby instantly relieving him of 4000 lbs of weight. The aircraft had sufficient speed for flight at this point had weight been reduced to 16,700 lbs by jettisoning the tanks. Indications are that the pilot did not consider this to assist him in getting airborne or stopping.

Once the decision was made to abort, the pilot did a good job in maneuvering the aircraft around ground obstacles on the overrun. His abort procedures, however, were not in accordance with NATOPS in that he did not broadcast his intentions to abort, did not deploy his speedbrakes, did not deploy his drag chute, and did not lower his hook in an attempt to engage the only arresting gear available to him (the MA-1A barrier). Nevertheless, he did shut down the engine with 5000 feet of runway remaining when it became apparent that his situation was critical.

Questioning of the pilot (and other squadron pilots) revealed a general unfamiliarity with the operation of the MA-1A barrier. The barrier incorporates a cable at ground level that is tripped or actuated by the aircraft nosewheel contacting the webbing. As the webbing is pulled forward by the nose gear, the cable becomes elevated to engage the main landing gear. The system is limited by aircraft configuration and is affected by the timing between nosewheel activation and main wheel transit.



In this respect, a problem arises from the A-4 droptank configuration. As the nose tire trips the cable, allowing it to elevate, the cable is forced downwards by the external fuel tanks and is rolled over by the main wheels. Air Force aircraft equipped with lower fuselage speedbrakes are cautioned to engage the barrier with speedbrakes retracted for similar reasons.

The IFR Supplement discusses jet barrier operation, and under the MA-1A states, "... designed primarily for main strut engagement, but tests reveal successful hook backup capability." Although the main wheels roll over the cable and are not engaged, they cause some turbulence in the cable which gives the hook an opportunity to engage it. The mishap board opined that since the pilot was going into the barrier anyway, it would have been appropriate to lower the hook.

The decision to remain with the aircraft once it had passed the MA-1A barrier fortunately resulted in no injury to the pilot. The mishap board, in considering this point, stated: "His other alternatives would have been to raise the landing gear or eject. The board feels that raising the landing gear would have been inappropriate here because of the full external fuel tanks and the fact that this choice would have taken any remaining maneuverability away from the pilot. The danger potential, however, was great enough in this case to warrant ejection.

"The aircraft was headed into the ILS localizer gear located on the overrun. Good fortune and braking kept the pilot from a collision with the gear. In cases such as this, the pilot gets into the psychological problem of 'I can pull this one out' versus stark terror and immobility. A combination of these two conditions has undoubtedly contributed to accidents in the past, but the board feels it cannot conjecture as to their effect in this case. The foregoing is a difficult point to stress in aviation because overemphasis could result in pilots ejecting from aircraft in salvageable situations."

**Pilot Proficiency**

Although this pilot had almost 1200 hours total A-4 time and was technically qualified for cross-country flight, he had flown only 9.9 hours in the preceding 90 days. One senior endorser commented:

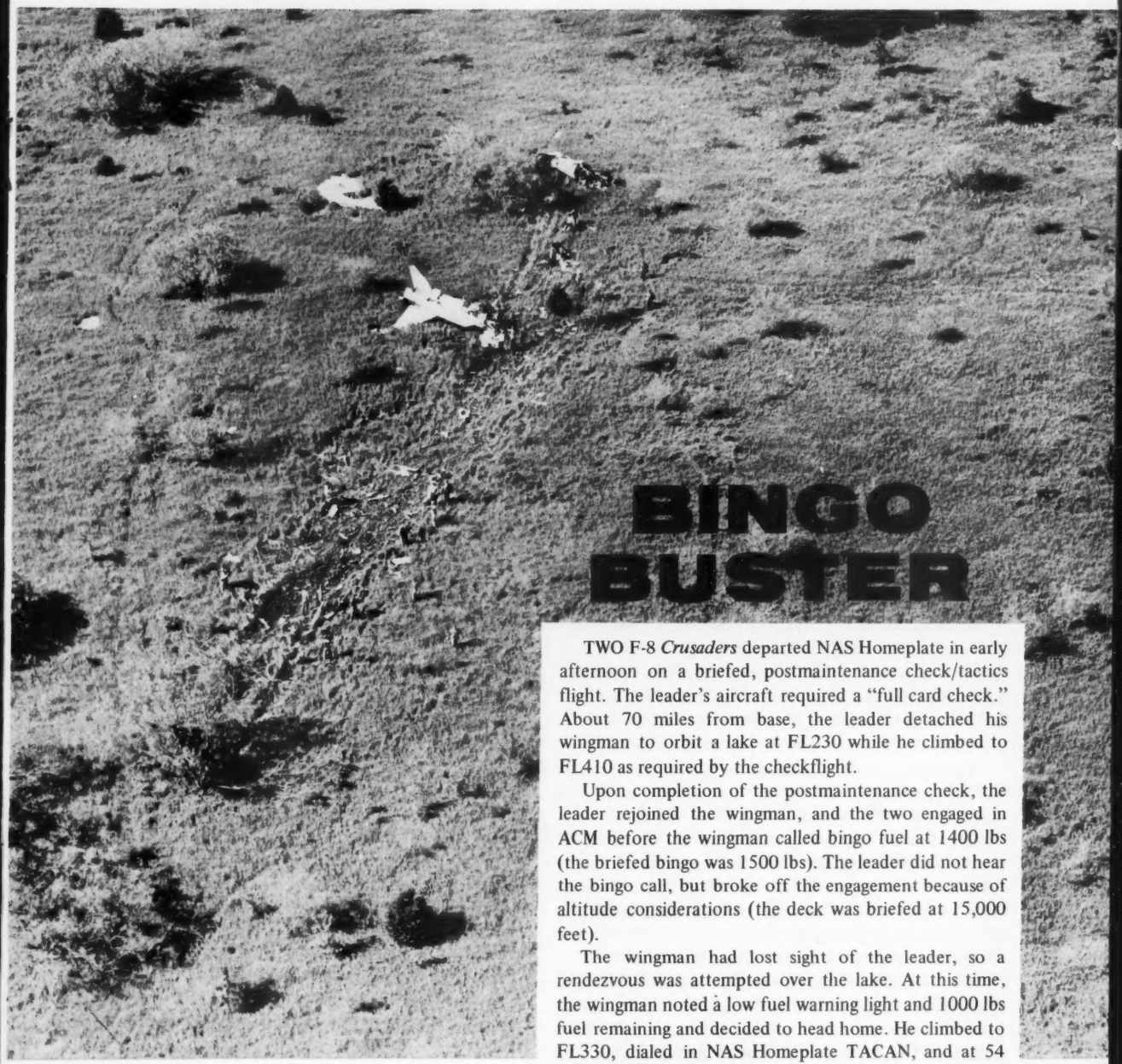
"It is obvious that the pilot involved in this mishap was not prepared to cope with the situation. The assignment of pilot error as one of the cause factors is certainly appropriate. The mishap board also correctly criticizes current NATOPS proficiency requirements in that a pilot may be current and qualified according to NATOPS, but not completely proficient. Current efforts in this area generated by the Naval Safety Center study on cross-country accidents will strengthen the NATOPS program and provide more specific guidance for pilots and commanders.

"It must be emphasized, however, that even more specific minimum requirements still cannot be considered a substitute for command responsibility. In this mishap, a pilot with 9.9 hours total time in the preceding 90 days (34 days since last flight) was allowed to fly a cross-country training flight. Regardless of his total time, time in model, or other considerations, this lack of recent flight time should have made his proficiency clearly suspect to those who reviewed and approved the cross-country request and scheduled the flight. Therefore, supervisory error, squadron level of command (failure to ensure the proficiency of the pilot consistent with the mission assigned), is considered a causal factor in this mishap."

*Mission requirements must be matched by pilot proficiency.* ◄

*". . . a prime example of how a major accident can happen on a clear day in the local flying area with no material or mechanical problems simply because of poor planning, poor flight discipline, and failure to act correctly and appropriately . . . "*

*AAR endorsement*



# BINGO BUSTER

TWO F-8 *Crusaders* departed NAS Homeplate in early afternoon on a briefed, postmaintenance check/tactics flight. The leader's aircraft required a "full card check." About 70 miles from base, the leader detached his wingman to orbit a lake at FL230 while he climbed to FL410 as required by the checkflight.

Upon completion of the postmaintenance check, the leader rejoined the wingman, and the two engaged in ACM before the wingman called bingo fuel at 1400 lbs (the briefed bingo was 1500 lbs). The leader did not hear the bingo call, but broke off the engagement because of altitude considerations (the deck was briefed at 15,000 feet).

The wingman had lost sight of the leader, so a rendezvous was attempted over the lake. At this time, the wingman noted a low fuel warning light and 1000 lbs fuel remaining and decided to head home. He climbed to FL330, dialed in NAS Homeplate TACAN, and at 54 DME began an idle descent.

The flight leader told Center to work the wingman direct to Homeplate, then accepted vectors himself. He

The aircraft crashed in an unpopulated area.

Despite a low fuel state, no emergency was declared.



heard Center clear the wingman to 7000 feet, but advised the wingman to remain at FL230 if fuel required it. The flight leader was then vectored toward the initial and was cleared to 7000 feet. He asked Center if they still had a paint on his wingman, and they said yes. Below FL180, the leader cancelled his IFR clearance and, with the initial in sight, proceeded to complete the low altitude portion of the postmaintenance check.

Meanwhile, Center attempted to vector the wingman away from Homeplate (he had not declared a low-fuel emergency). The wingman, however, cancelled IFR when below FL180 and proceeded VFR. He contacted the tower and requested a straight-in approach. Passing 5000 feet, the engine flamed out from fuel starvation. After an attempted relight, the pilot successfully ejected at 2500 feet and 200 KIAS.

The leader landed with 450 lbs of fuel.

Both pilots contributed to this accident. The flight leader briefed a bingo too low for the operating area (the center of the area was approximately 95 miles from homeplate) and made it highly unlikely that the wingman could comply with the NATOPS requirement for 1000 lbs downwind to final. He did not request a fuel check after 4000 lbs until informed that the wingman was proceeding direct to NAS Homeplate because of fuel considerations. Then, upon learning of his wingman's problem, he failed to advise his wingman to consider diverting to an AFB 25 miles closer than Homeplate.

As for the wingman, he is a qualified ACM instructor and, although relatively new to the F-8, was aware of the high fuel consumption required for ACM and, therefore, should have been constantly aware of his fuel state. He did not report bingo fuel and did not head home immediately upon realizing he was below bingo. Had he reported and departed as briefed, it would have been possible for him to make it home.

In addition, he did not declare low fuel, minimum fuel, or an emergency at any time to either a controlling agency or the flight leader. Such a declaration would have resulted in assistance and/or priority handling by Center and might possibly have prevented the accident through priority vectoring to either NAS Homeplate or Blank AFB.

*Finally, he overflew Blank AFB, 25 miles short of Homeplate.*

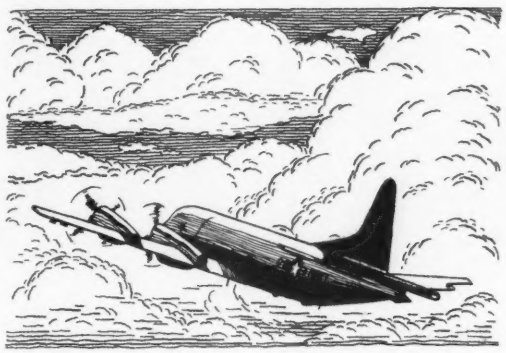
Clearly, this was an avoidable accident. ◄

# Where Are We?

By LCDR Frank G. Steiner, RTU-68

THE MISSION for the P-3 crew was a routine, 5.3-hour navigational training flight that was planned to end at Islandhome. Qualified people in a sophisticated machine merely plying their trade. How could anything go wrong? Events later proved this flight to be anything but commonplace. As happens so frequently, the individual events leading up to a problem do not cause alarm, but collectively – zap.

Preflight disclosed a less than perfect navigational system, yet one that should have been more than just satisfactory. The air mass computer and latitude/longitude readout were inoperative, and the TACAN DME operated intermittently – no reason to worry. The crew signed for the aircraft and departed. After all, aircraft have been navigated all over the world for years without any of the sophisticated equipment now inoperable in this aircraft.



Their weather briefing advised of a frontal system about 300 miles short of their destination, and they found it just as advertised. They had flown a bit over 3 hours when they had to traverse the front. Only one celestial fix had been taken. Wouldn't you know the LORAN gear would go sour? An assistant navigator left the receiver on until it overheated, and the navigator didn't catch the mistake. Matter of fact, the instructor navigator didn't catch anything but a bad time for his lackadaisical performance.

To make things worse, the PPC hadn't asked either navigator for a posit report. So there they were, tooling along at FL250 with a ground speed of 300 plus. (Doesn't that kind of remind you of the old cliche "I don't know where we are, but we're making great speed"?) The P-3 crew was in exactly that predicament.

The realization finally dawned that *they just might be lost*. Now for the gremlins. Previously, they had enjoyed smooth air, clear communications, and good radar performance. Then everything reversed. They entered turbulence, commenced getting lots of static, and then saw glitches appear on the scope.

After repeated attempts, contact was finally made on HF with Ocean Airways. The PPC requested an HF/DF steer, and 37 minutes later, he received a reply – that's over 200 miles farther down the road. A steer was given, a turn to heading was made, and much later it was discovered that a reciprocal heading had been given. *(There aren't many places left in the world with old equipment where this could happen. – Ed.)* The crew was flying *away* from Islandhome.

Now, as everyone knows, a P-3 carries lots of fuel. When the PPC decided it was time to knock off this "mickeymouse," find out where they were, and get on with the program, they were down to 4 hours of petrol remaining. (All you single-seat, fast-movers eat your heart out.) Ocean Airways came back on the wire and advised the crew to disregard their previous steer.

The PPC then put the plane into an easy orbit, had the navigators get to work to establish their position, contacted another Navy plane, and, when their position was known, headed for land. They were a mere 600 miles from Islandhome, their original destination.

*Hi ho, hi ho,*
*Off to base we go.*
*Any land will do*
*With a runway too,*
*Before this trip we blow.*

They made it. They made it to the land nearest their position – *not* to their original destination. So, OK, they weren't the first flight crew to become lost. But they finally helped themselves, and of course, others helped them, too. This is a good example of why it's important, when lost, to:

**Climb CONFESS Conserve**

The brightness of Monday morning's light focused attention on a negligent PPC. His indecision, in confessing late, added to the distance to be flown once they finally determined where they were. Further, he was remiss in not requiring periodic posit reports from the navigators – knowing that one or two of his electronic aids to navigation were not working at departure.

Fifteen hundred miles over the briny is reason enough to know *all* the time what you're doing, where you are, and what you have to do to get where you're going. Concur? *(Yup. – Ed.)*

# FOR WANT OF A BOLT

A SECTION of F-4Js commenced a prebriefed, night, military power section takeoff. Everything proceeded normally for about 3000 feet of roll, when the leader sensed a power loss and told his wingman to execute a separate takeoff.

The leader selected afterburner on both engines, but the port burner failed to light. Airborne over the upwind end of the runway, the port engine indicated 69 percent with afterburner selected. The *Phantom* continued to climb to 850 feet MSL and accelerated to 250 knots.

At this point, the pilot again sensed a distinct loss of thrust which he believed to be a failure of the starboard afterburner. He attempted to reselect burner, but neither would light. As airspeed and altitude deteriorated, the RIO and pilot ejected at approximately 400 feet.

An analysis of the wreckage established that:

- The port engine throttle box and torque shaft assembly, PN 20537, and throttle crossover shaft, PN 105B2524P1, were not engaged at impact. An improperly sized bolt (3/16-inch vice 1/4-inch) had been installed in the spline shaft that connects the throttle box torque shaft to the engine crossover shaft. This permitted a throttle disconnect.
- The starboard engine exhaust nozzles were in the *full open* position.

A disassembly inspection of the port engine throttle box and torque shaft assembly, the port throttle crossover shaft, and the starboard engine and associated accessories confirmed that the port throttle disconnect occurred prior to impact. The inspection also revealed

that the output servo, pilot valve pushrod, PN 917A198P4, in the starboard engine nozzle area control had failed due to fatigue. Failure of this pushrod caused the exhaust nozzle to position full open. The engine manufacturer, regarding afterburner relight capability of the J79 engine with the exhaust nozzle fully open, indicated that relight is doubtful.

An analysis of the mishap indicates that on takeoff the port throttle disconnected and the engine stabilized at 69 percent. Afterburners were selected, but only the starboard afterburner lit; however, adequate power was available for acceleration and climb. As the aircraft accelerated to 250 knots and reached 850 feet MSL, the starboard engine nozzle area control failed. Upon failure, the exhaust nozzle opened fully causing a 3000 lb thrust loss. The pilot interpreted this thrust loss as afterburner blowout and recycled the throttle. When the afterburner was deselected, the maximum thrust available with an open exhaust nozzle at military power on the starboard engine was 5460 lbs. The port engine at 69 percent RPM contributes approximately 1000 lbs of drag. Therefore, the net thrust available was approximately 4400 lbs – not enough to sustain flight.

Engine Bulletin 141 provides for a redesign of the failed pushrod to be retrofitted in J79 nozzle area controls. In addition, a NATOPS change was proposed by the squadron involved to amplify the "nozzle failed open" emergency procedures.

We might end our narrative at this point, but the use of an incorrect bolt in the spline shaft which precipitated this accident deserves further comment. It is only one in a long series of incidents involving the use of incorrect bolts. The nature and extent of the problem is indicated by a COMNAVAIRLANT message (paraphrased) of December 1972, i.e.:

A report has been received of the loss of an aircraft and one of its aircrew because an improperly secured instrument panel jarred loose during a cat shot, forcing the stick aft, causing overrotation. There is a strong possibility that the use of improper retention bolts caused this tragic accident.

Another recent message reports numerous cases of maintenance personnel indiscriminately installing incorrect bolts during replacement of major indicators in the instrument panels of A-7 aircraft. Other message reports include:

- Loss of an ejector ordnance rack fairing from an A-4 inflight due to use of improper bolts.
- Gouging of stationary swash plate of a CH-46 because an improper bolt was installed in the pitch link varying assembly.
- Unwinding of an F-4 port engine during takeoff roll because a bolt of improper size was installed in the throttle control box. (*No, this isn't the same mishap detailed earlier. In fact, several incidents of this type have been reported to NAVSAFECEN during recent months. – Ed.*)
- An F-4 landed nose gear up because an improper bolt was used in the nose landing gear uplock system.

These are only a sampling of mishaps which have been reported during a 30-day period. A greater number of incidents could be cited in which bolts have failed or were lost because of improper torque or improper installation.

The consequences of what appears to be a widespread breakdown in maintenance discipline are threefold:

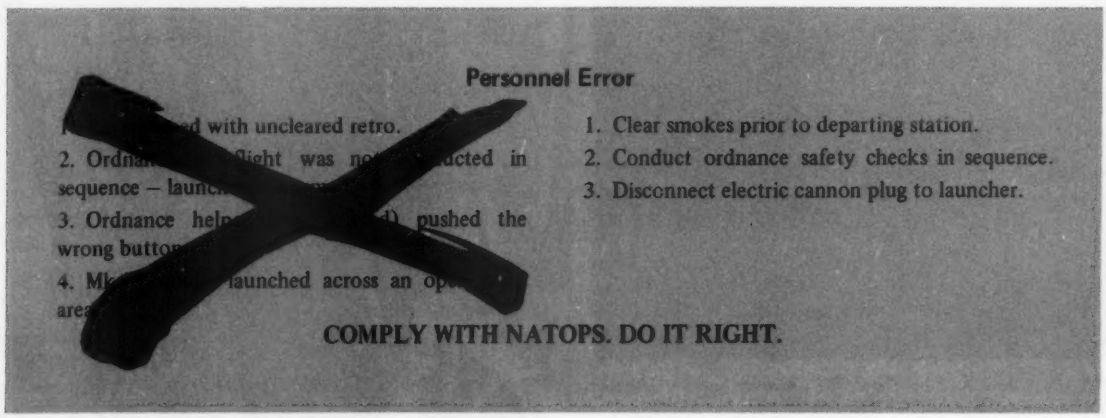
(1) Danger to life.

(2) Loss or damage to aircraft.

(3) Additional maintenance workload (by virtue of inspections) on maintenance organizations that are already undermanned and overworked.

The COMNAVAIRLANT message concluded with a bit of irrefutable logic, "We cannot afford any of these."

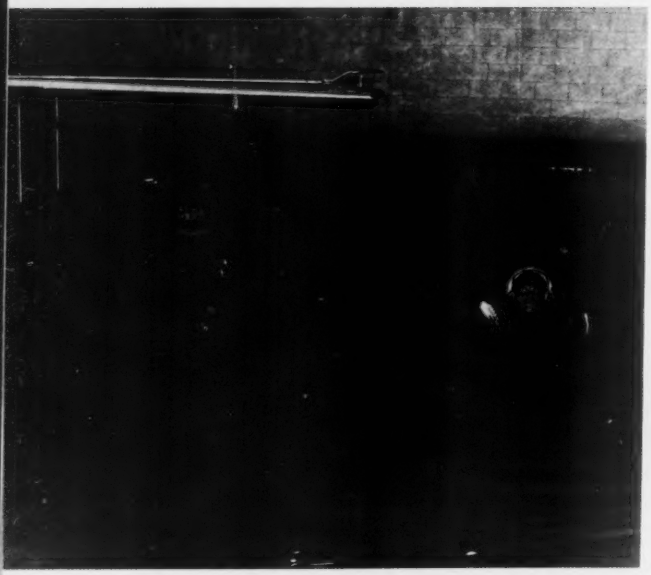



Personnel Error
1. Clear smokes prior to departing station.
2. Conduct ordnance safety checks in sequence.
3. Disconnect electric cannon plug to launcher.
COMPLY WITH NATOPS. DO IT RIGHT.

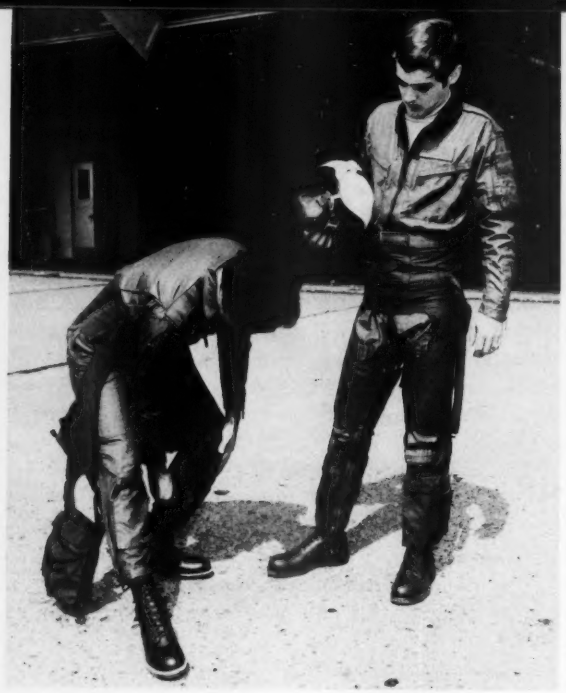
A piece of equipment designed at NADC goes up the ejection seat tower at NADC's facility at the Naval Air Engineering Center.

# Back to the Drawing Board





A newly developed helicopter life preserver, survival vest, and body armor configuration is tested in the pool.



Two Crew Systems Laboratory engineers demonstrate the new nomex anti-G suit, the CSU-15/P, and the nomex summer flight coverall, CWU-42/P. The anti-G suit has a zipper up the inside leg rather than laces and has a velcro adjustment on the hip. The new flight suit is made of nomex II which gives greater fire protection than the present nomex. The flight suit design is more smartly tailored than the old suit, and pockets not needed can be removed (no pocket is sewn into a seam).

The engineer on the right holds a helmet designed specifically for future fighter pilots in high-performance aircraft, a "mission-specific" helmet. This is a result of a long-range, in-house helmet design program.

The Crew Systems Laboratory has four prototype models of mini-inflatable, insulated ribbed rafts for helo crews. Two are designed to be worn on the back, a third to go in the pocket of the flight suit, and a fourth fits underneath the life preserver. Pool and open sea testing have been completed. Navy R&D field tests will begin shortly. Here, a technician conducts a pressure test on one of the prototypes.

WHO designs our personal flight gear – our life support equipment?

This question was asked in a recent letter to the editor (APPROACH, August 1973). Space limitations on the "Letters" page kept our answer short, but we promised an article on the subject. Here it is.

The key group in design of Navy life support equipment development is the Crew Systems Department of NADC (Naval Air Development Center) at Warminster, Pa. These people are engineers and technicians with a wide range of experience and expertise in their specialized fields.

The Crew Systems group "honchos" the equipment, but it is the naval aviation community that sets the requirements and tests and evaluates the results. Lives of pilots and aircrewmen depend on life support equipment. Small wonder it's a subject taken very seriously.

When the Crew Systems Department has been tasked to come up with a new item, prototype models are developed and tested. OPTEVFOR (Operational Test and Evaluation Force) and fleet squadrons on both coasts evaluate the new designs. Based on these squadron evaluation reports, the design either goes into production as is, is modified, or rejected. The Crew Systems people are also the ones who have cog on the Safety URs you submit on life support equipment.

The Crew Systems Department has four divisions. These are: Life Support Engineering, Escape Simulation and Crash Safety, Human Factors Engineering, and Life Sciences. All four divisions are involved in some form of life support activity. The first two divisions, however, are primary in the department's work in aircrew

A technician (left) and an engineer (right) monitor a solid chemical oxygen system for MPES, the maximum performance ejection seat, a concept under study at the Crew Systems Department of the Naval Air Development Center.

A Crew Systems Laboratory technician adjusts the experimental integrated body armor, survival vest, and life preserver being developed for helo crews (see pool test photo). This is part of a complete four-part survival system for helo people: new heat seal life preserver, new survival vest, body armor, and mini raft. The idea is that the helo crewman will wear the life preserver and survival vest at all times. The body armor and mini raft can be put on whenever required.



environment, escape, and descent as well as survival and recovery.

**Life Support Engineering Division**

Included in current life support engineering projects of considerable importance are a system for inflight generation of oxygen being developed under a joint Navy-Air Force effort, the encapsulating liferaft, and a modular antiexposure system. The latter includes a constant wear, liquid loop garment that can be connected to a heated water source for enough heat to sustain a survivor up to 24 continuous hours in a low-temperature environment. This system incorporates the encapsulating liferaft.

Another project is MAN/SAFE (Manual/Automatic Separation and Flotation Equipment). When developed to operational use, MAN/SAFE will feature the first automatic parachute release system (in the water); the first manual single point release capability; the first electronic life support system featuring thermal batteries, a capacitor discharge system, and CADs (Cartridge-Actuated Device) for actuation; and the first Navy automatic life preserver and liferaft inflation system.

Still another key project is the mission-configured life support system. This will culminate in equipment and techniques especially developed for helicopter, fighter, attack, and ASW/patrol aircraft. Future plans include development of integrated crew module technology and criteria.

The Life Support Engineering Division under "Dino" Mancinelli (Code 404) has five branches. For information and future reference, here are codes and names:

Fleet Support Engineering (Code 4041, Jon Harding)

Life Support High Altitude Systems (Code 4042, John Kiefer)

Life Support Protective Equipment (Code 4043, David DeSimone)

Quality Assurance (Code 4044, Dan Cannon)

Survival Detection and Acquisition Systems (Code 4045, Bill Zarkowski)

**Escape, Simulation, and Crash Safety Division**

At the present time, the Escape, Simulation, and Crash Safety Division is working on ejection seat exploratory development programs to develop 1) a single state propulsion system for ejection seats, 2) integrated survival equipment packages, 3) an automatic pelvic, shoulder, and head restraint system, 4) trajectory control, and 5) ultra-lightweight ejection seat structure and components.

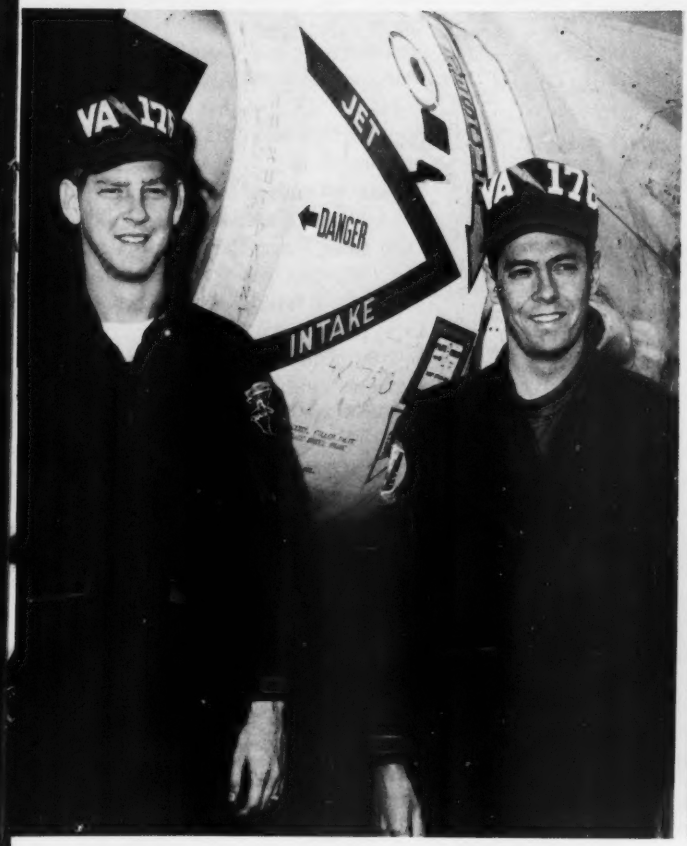
Division engineers are also studying human tolerance with an eye toward increasing allowable peak accelerations and onset rates during seat ejection. Also under formation and development are technology and criteria for use in future integrated crew modules.

Heading the division is W. G. Law (Code 401). Branches are Acceleration (Code 4011, Cliff Woodward), Experimental Design (Code 4012, Martin Goldfuss), Simulations (Code 4013, Richard Crosbie), Impact Restraint and Ejection Systems (Code 4014, Marv Shulman), and Engineering Shop (Code 4015, Frank Grau).

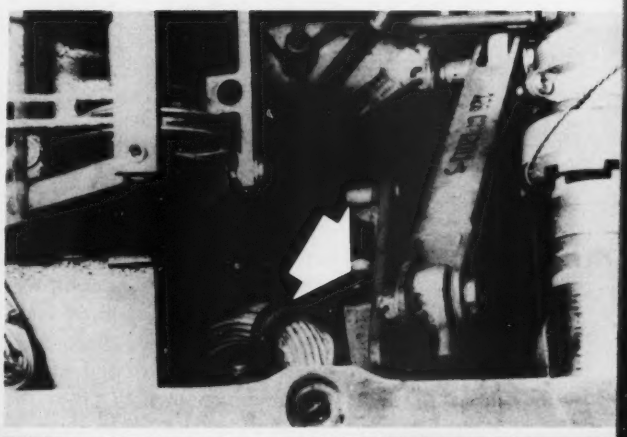
In summary, a great deal of research, planning, testing, and evaluation go into each piece of your personal survival equipment. Once such a piece of equipment is in the Fleet – in the squadrons – and is required wearing by General NATOPS, it's up to you. Wear it and use it properly, and if you have an idea to improve the situation, communicate!

# Bravo Zulu

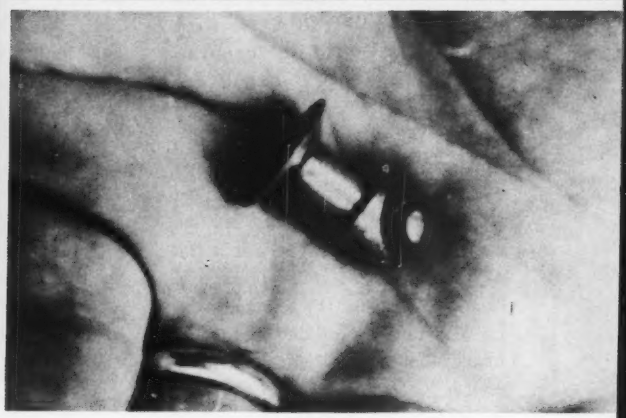
LCDR Earl F. Wilson, VA-176




LT J. P. Harris



LCDR Earl F. Wilson



The cause of it all.

LCDR Wilson and his Bombardier/Navigator, LT J. P. Harris, were engaged in visual dive-bombing practice flying their A-6C *Intruder*. Pulling off target after his seventh run, LCDR Wilson noted that his control stick would deflect to the left but would not move right of the center (neutral) position. The aircraft was frozen in a left bank. LCDR Wilson used right rudder to level his wings and maintain control. He then declared an emergency and proceeded toward NAS Oceana, maintaining lateral control of the *Intruder* with left flaperon and right rudder.

LCDR Wilson discussed the situation with his wingman who had experienced a similar situation a few years earlier. Together they concluded that an approach with flaps and slats retracted would afford the best lateral control for landing. LCDR Wilson requested and received clearance for a straight-in approach to an arrested landing. When comfortably close to Oceana, he dumped fuel to landing weight and dropped his wheels and hook. To achieve maximum rudder authority, he also selected "spin assist."

LCDR Wilson then performed a flawless, visual straight-in approach and short-field arrested landing, controlling the aircraft laterally without benefit of right stick movement.

**Postflight inspection revealed a dzus fastener jammed between the flaperon locking assembly and flaperon locking rod, resulting in binding controls whenever the pilot attempted to move the stick right.**

LCDR Wilson and his BN, LT Harris, professionally mastered a potentially disastrous situation by exercising judgment, skill, and technical knowledge.

Well done! ◄

## Anymouse

# GAS GOOF

MY BN and I were scheduled as the overhead tanker crew in a KA-6D on the last cycle of the evening from a CVA. We launched at 2100 and, after a somewhat uneventful hop, were given vectors from overhead the ship to the downwind leg of a CCA. We were instructed by CATCC to "dump to 2000 lbs to give." I dumped, retaining a total of maximum trap fuel plus about 2500 lbs.

Ahead of our *Intruder* on final was the other overhead tanker, an A-7. As we turned on base leg, we were informed by CATCC that the A-7 was aboard and to "dump Charlie." Again I selected the DUMP position on the fuel management panel and began to concentrate on flying the CCA.

After what seemed like only a few seconds, I heard the BN exclaim, "Check your fuel!" A quick glance at the fuel quantity gage revealed that I had neglected to secure the fuselage fuel dump when we reached maximum trap weight. We now had a total of 2800 lbs of fuel. To make matters worse, Bingo fuel for A-6s was 3300 lbs, and no other tankers were airborne.

By now we were on short final, so there was little else to do but press on. When my BN called the ball, he purposely omitted the fuel state (no one ever mentioned that omission). The pass was graded "Fair, one-wire, not enough power at the ramp." Words simply can't express the relief I felt when the hook grabbed a wire.

This episode went unmentioned in the squadron by the BN and myself; it was hardly the type of stunt one pulls and talks about. It's a fact, though, that we both learned an indelible lesson from that experience – *both* crewmembers share the responsibility for monitoring crucial activities and gages in the cockpit. Each crewmember's life depends on his flying partner's attentiveness.

NATOPS states that the entire fuselage fuel tank (9000 lbs) may be dumped in 3.5 to 4.0 minutes. The dump stops at 3600 lbs in the A-6A/E and 2400 lbs in the KA-6D. More than once I've heard tales about aircrews in A-6s forgetting to secure their fuel dumps, and here's living proof that it can happen.

I shiver to think about what the outcome of this story might have been if I had boltered or experienced maintenance difficulties – embarrassment at best, loss of an aircraft and both our lives at worst. From now on, BOTH sets of eyeballs are considerably more attentive in that cockpit.

Tankermouse

*Obviously, you and your BN have learned a valuable lesson from this incident. Let's hope others will benefit.*



The purpose of Anymouse (anonymous) Reports is to help prevent or overcome dangerous situations. They are submitted by Naval and Marine Corps aviation personnel who have had hazardous or unsafe aviation experiences. These reports need not be signed. Self-mailing forms for writing Anymouse Reports are available in readyrooms and line shacks. All reports are considered for appropriate action.

REPORT AN INCIDENT,
PREVENT AN ACCIDENT

**Raft in P-3**

PRESENTLY, I fly P-3 aircraft out of Jacksonville. During my last deployment, it became apparent to me that on most flights P-3 crews have a potential survival problem. It was not uncommon to fly 10-hour missions over the Atlantic. During these missions, the aircraft normally operated at high altitudes – high enough that if an emergency came up which would require a decision to ditch or bail out, the crew would most likely be forced to bail out (especially in the case of an uncontrollable fire).

Under present conditions, after bailout, the crew would be scattered over a fairly large area of the ocean with the only survival gear being their lifevests and a sonobuoy. We, of course, have rafts aboard, but there's no way to get them into the water if we have to bail out.

It would be many hours before SAR would be alerted and several more before they found the crew. Without a liferaft available, I feel the crew's chance of survival would be nil. Granted, this type of an emergency has never happened, and we pray that it doesn't, but the lives of 14 men seem to be a high price to pay before we can get adequate survival gear for the P-3.

What I propose is to strap parachutes to the liferafts, similar to the way parachutes are strapped to individuals. These chutes would be attached to the aircraft by a static line actuating a pressure switch that would in turn deploy the chute at approximately 10,000 feet, or if already below 10,000 feet, it would deploy immediately.

Also, attached to the chute harness would be a high-intensity strobe light that would illuminate upon parachute deployment or water entry. A flotation device could be attached to the strobe light itself.

The parachute would drop the raft in the vicinity of the crew, and the strobe would help the crew locate it. This would at least give the crews a chance of survival and prevent forcing a crew to ditch an aircraft when they should bail out.

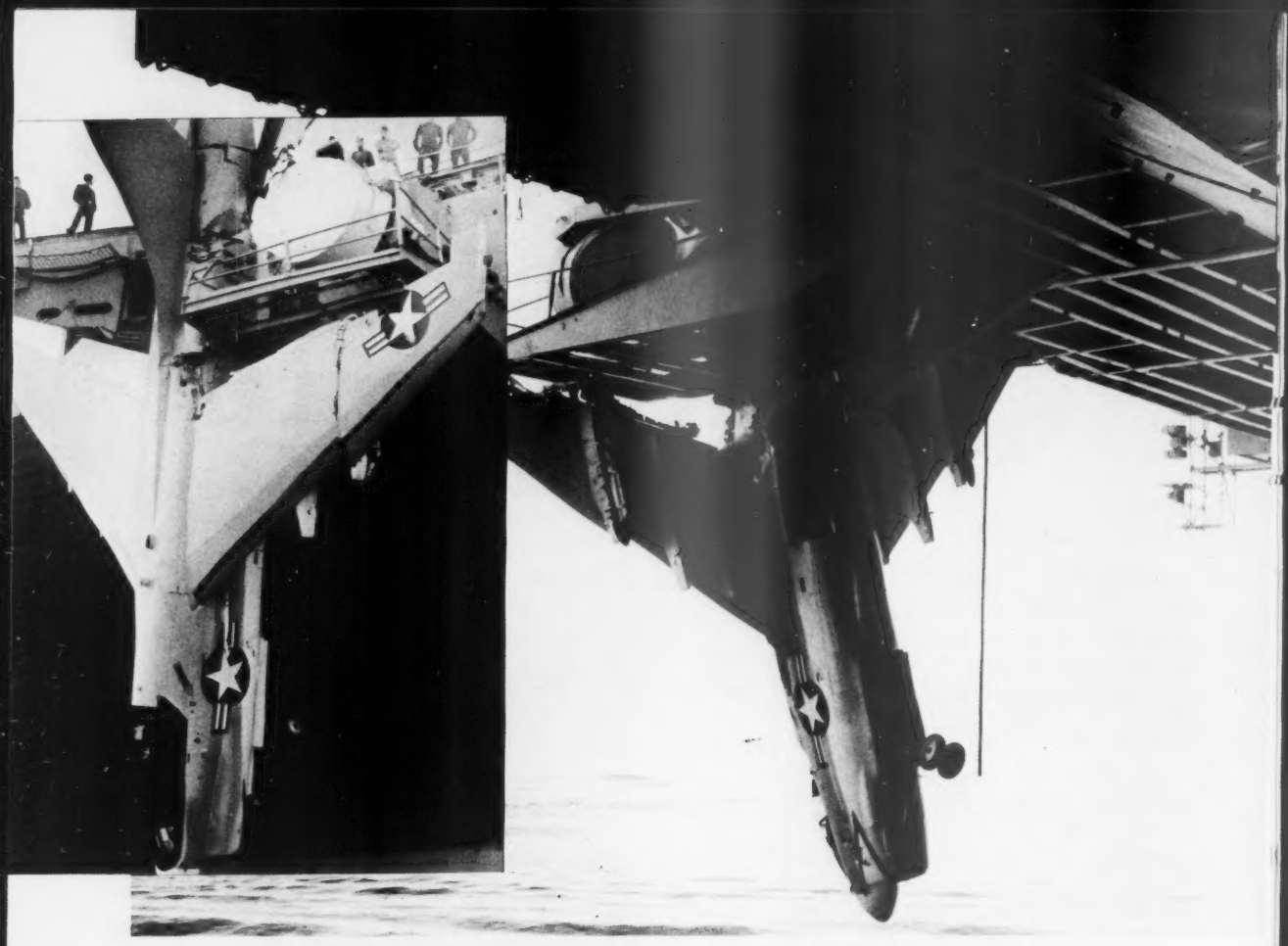
The parachute could be strapped to the liferaft when the aircraft is scheduled to fly a high-level mission. Removing the parachute could be placed on the descent checklist so the raft would be ready for ditching at lower altitudes. The rafts, themselves, would probably float under the surface, but the strobe could be attached like a sonobuoy to mark the raft's location.

P-3 Mouse

*Your proposal to attach parachutes to P-3 liferafts for deployment during emergency bailout is feasible, but would require a great deal of R&D. It would necessitate a parachute harness design that would not interfere in a ditching situation, yet would offer enough strength and security to withstand parachute opening shock. The parachute would require either an automatic actuator or a static line.*

*The primary drawback to this concept is that survivor and raft could land in the water far apart because of aircraft movement and parachute wind drift during descent. Moreover, a raft floats low in the water, as you point out, so locating and retrieving it in the ocean would be difficult, if not impossible. A strobe light marker attached to the raft, as you suggest, would help the survivor locate the raft at night, but would be of limited benefit during daylight.*

*We feel that the most logical method of providing liferaft protection in a bailout situation is to attach a one-man liferaft to the parachute. In this case, an SSP (standard soft pack) would be the answer. But then we are faced with a parachute stowage problem in the already overcrowded P-3.* ◄



# HANGING LOOSE

AFTER a routine, uneventful, practice night bombing mission, the pilot of an A-7E *Corsair II* commenced his approach to the CVA with a standard CCA and an ACL Mode II final approach. He was waved off by the LSO at 3/4-miles because of a fouled deck. Following radar vectors around the pattern, the pilot commenced his second ACL approach by turning final at about 8 miles.

The approach from 8 miles to 3/4-mile was flown by the pilot utilizing his ACL "needles" and monitored by the CCA controller who issued occasional advisories. CATCC advised the pilot that he was "slightly left of centerline" at 1¾-miles. The pilot overcorrected right and was told to "call the ball." At this time, he reported "meatball" with 2500 lbs of fuel remaining. The deck was pitching 12 to 14 feet as determined by the hook-to-ramp indicator on the LSO's platform console.

The aircraft remained right of centerline with imperceptible deviations from a steady course until 7 seconds before touchdown. At that time, he smoothly corrected left by dropping his left wing and angled across the centerline. Going slightly low in close, the *Corsair* driver overcorrected to above glide slope, then dropped his nose slightly to land. The aircraft touched down 12 feet beyond the No. 2 crossdeck pendant *and 22 feet left of centerline*. After a landing rollout of 256 feet, the left mainmount rolled over the deck edge coaming.

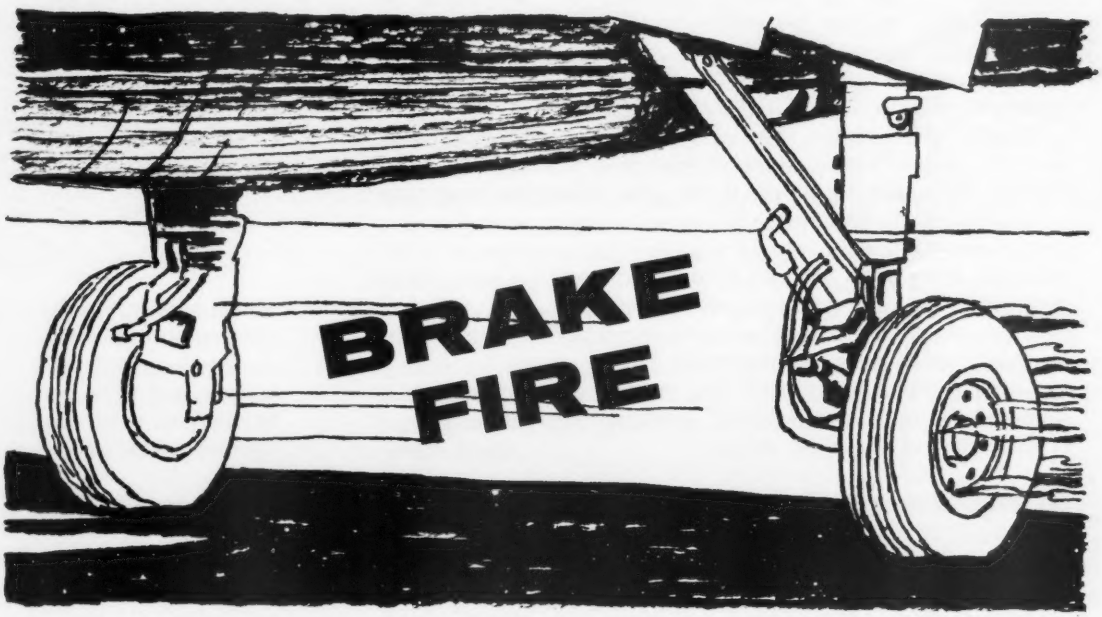
As the pilot felt the left mainmount leave the flight deck, he commenced the ejection sequence by pulling his face curtain. He aborted the ejection effort, however, after partially pulling the curtain because he believed his roll over the side had stopped. As the pilot terminated

his ejection attempt, the plane continued over the side. The pilot suddenly realized that he was outside the safe ejection parameters and decided to "ride it out."

The aircraft rolled almost inverted and fell nose down – still suspended from the crossdeck pendant (see photos). The air officer transmitted several times for the pilot to secure his engine. The pilot jettisoned his canopy, heard the radio transmissions to secure his engine, and attempted to do so by pulling the master fuel shutoff lever. Unable to move this lever, he managed to close the throttle after several attempts.

The pilot was rescued from the cockpit by flight deck personnel using an OBA tending line – a light, flexible wire rope 50 feet in length, 3/16-inch diameter with a quick attaching/releasing snap hook on both ends. After snapping one of the hooks to his torso harness, the pilot was hoisted to the closest catwalk. The *Corsair* remained suspended from the crossdeck pendant until the ship returned to port, where the plane was hoisted clear.

Investigators concluded that the pilot's scan deteriorated in the latter stages of the approach to a point where he was unable to maintain proper lineup. They noted that the natural apprehension of a night carrier landing on a pitching deck and glide slope deviations experienced during the approach were factors in channeling the pilot's attention away from his lineup. The LSO was also considered a factor in that he failed to note the erroneous lineup and issue a timely waveoff. ◄






THE A-6 pilot was taxiing to his line after a normal field landing. About the time the tower noticed that he was trailing smoke, his plane captain saw it too.

The plane captain signaled the pilot to stop and went to work extinguishing the fire with purple K. A cloud of purple K rolled under the aircraft and, because of a light tailwind, was ingested by the starboard engine – still turning at idle.

Later, an inspection of the starboard engine tailpipe revealed a light residue which necessitated an engine change. The port brake assembly was also replaced.

Hot brakes are not uncommon during field operations of the A-6, and taxiing an A-6 with both engines, even at idle, requires braking to maintain safe taxi speed. This frequently results in hot brakes. To counteract this, it is the usual daytime procedure to cut one engine to reduce residual thrust. When an engine is secured, however, a small amount of fuel is drained overboard near the respective wheel. If fuel comes in contact with a hot brake, fire would ensue.

The use of purple K by the plane captain was proper. However, to prevent the powder from being ingested in the future, maintenance personnel, plane captains, and firefighters have been instructed to ensure that the aircraft is turned into the wind when practicable. ◄

**Dynamic hydroplaning.** When pneumatic tires of an aircraft (or highway vehicle) roll over water-covered or flooded pavements, hydrodynamic pressures develop between the tire "footprint" and the pavement. The higher the groundspeed, the higher the hydrodynamic pressure. At a critical speed, hydrodynamic lift, resulting from built-up pressure under the tire, will equal the weight riding on the tire. When this occurs, total dynamic hydroplaning speed has been reached. Any increase in ground speed above this critical value lifts the tire completely off the pavement, leaving it supported by fluid alone.

Critical groundspeed for dynamic hydroplaning *depends upon the tire inflation pressure.* Assuming that the runway is flooded to a critical depth, it has been calculated that total hydroplaning will commence at a speed which is approximately nine times the square root of the tire inflation pressure. (This equation is valid for smooth tires or grooved tires where fluid depth exceeds tread groove depth.) For example, a tire inflation pressure of 100 psi would require a speed of 90 knots for the onset of total dynamic hydroplaning.

*Caution:* Partial hydroplaning can occur at speeds below that required for total hydroplaning, reducing both tire-to-ground coefficient and cornering ability.

# ABO

**Research in recent years, pri identification and definition surfaces which fall under the ge**

**Viscous hydroplaning.** Visco lower groundspeed than dyna a thin film of fluid (perhaps inch in depth) on a smooth existing on many runways is the thin viscous film which l



# BE PR

Knowledge of existing runway conditions is a necessary element in preparing for landing. The IFR Enroute Supplement contains a section which discusses runway condition reports and the meaning they have for Navy pilots.

If difficulty is anticipated in stopping or maintaining directional control, there are several things a pilot can do to stack the odds in his favor. Specifically, he should be thoroughly conversant with procedures spelled out in the NATOPS flight manual for his aircraft, including stopping distances. In addition, he should give consideration to the following measures insofar as they do not conflict with NATOPS.

(1) Reduce landing weight as much as practicable to reduce approach speed to a minimum.

(2) Land on the longest/widest available runway, considering crosswind and arresting gear limitations.

(3) If operating a carrier type aircraft, land near the end of the runway (on speed) utilizing a carrier type landing. Do not flare.

(4) Use all available drag devices (spoilers, speed brakes, etc.) and aerodynamic braking appropriate and not in conflict with NATOPS.

(5) Use rudder for directional control until below rudder effectiveness speed. If directional cont

# UT HYDROPLANING

primarily by NASA, has resulted in the
ion of three types of traction loss on wet
the general term of hydroplaning:

Viscous hydroplaning occurs at a much
dynamic hydroplaning. It requires only
rhaps as little as one-thousandth of an
ooth runway. Fortunately, the texture
s is sufficient to break up and dissipate
ich leads to this type of hydroplaning.

**Rubber reversion skidding.** This can occur at speeds as low as 5 knots and requires only that the runway be damp. Here, if wheel rotation is stopped, even momentarily, friction-generated heat and steam is formed in the tire footprint. The steam is superheated as a result of high pressure existing in the footprint area. The temperature of the superheated steam causes the rubber to revert to its uncured state and form a seal around the footprint area which traps the steam. As in dynamic hydroplaning, this results in a near complete loss of braking effectiveness.



## PREPARED

is expected to be a major problem because of crosswind (or any other condition), consider an arrested landing utilizing approach-end or midfield arresting gear. In this way, arrestment can be effected before the rudder loses its effectiveness for directional control.

(6) Below rudder effectiveness speed, use brakes (carefully). A conscious effort must be made to avoid locking brakes, which could result in rubber reversion skidding, a loss of directional control (blown tire(s)), or viscous hydroplaning.

(7) Be familiar with arresting gear location/capabilities. Be mentally prepared to drop the hook and plan to take the gear if in doubt.

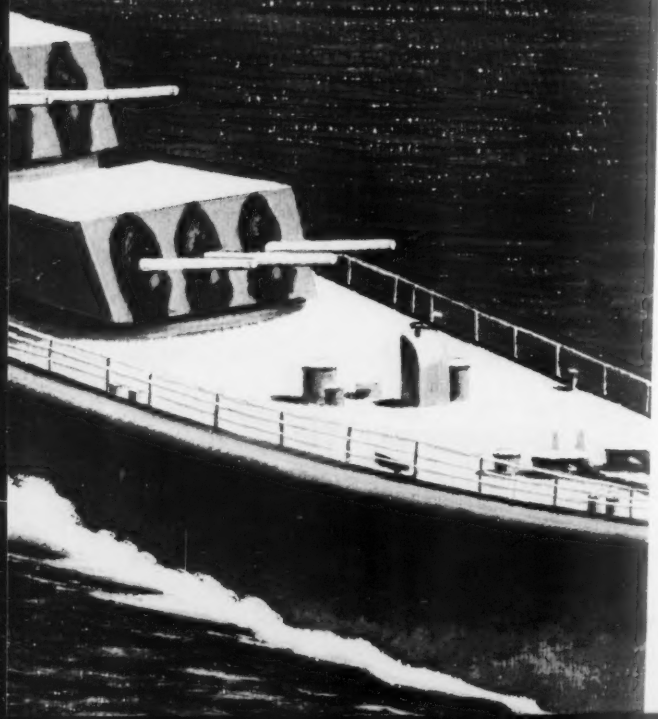
(8) Use reverse thrust devices if available and needed, providing you can do so without causing directional control problems.

(9) If arresting gear is not available and there is doubt that the aircraft can be stopped on the runway:

- If adequate runway remains (using a precalculated go, no-go speed/distance) take it around; if not,
- Secure the engine(s). Keep in mind that certain systems may be lost when the engine(s) is (are) shut down.

# Sixty Seconds to Doomsday

By R. T. Forbush



WHAT happened on that beautiful day in May still makes my blood run hot and cold. Hot, because I was boiling mad at a fellow aviator for not doing what he should have done. And cold, because I watched this same fellow naval aviator lose his life. You can dub me a no good SOB for feeling the way I do, but after you hear the details, maybe you'll be a little more tolerant.

First of all, let me give you the setting. I was O-in-C of a helo det based aboard a heavy cruiser. On the afternoon of this particular day, the ship was maintaining station about a mile east of the coastline, and some 40 miles southeast of an area where carrier air strikes were being conducted against the enemy.

Because of the strikes, we were in Readiness Condition I, which meant that my crewman and I were to be strapped in the chopper standing by for a possible rescue mission.

A call for help wasn't long in coming. A jet in company with two squadron aircraft was on its way towards our ship. The aircraft had taken a hit in the port wing, and fuel was pouring out of the fragmented hole.

While starting, engaging, and taking off, I was briefed that the pilot of the crippled aircraft would get as close

to our position as possible, then eject. There was no chance of his returning to the carrier.

The ship gave me a steer in the direction from which the three jets were approaching. Less than 10 miles from the cruiser, I was able to establish radio contact with the pilot of the stricken aircraft. He was at 10,000 feet, and we were closing rapidly.

When the pilot was directly overhead, he told me he'd head his bird seaward and punch out. Shortly thereafter, he did just that. His chute opened nicely as he began his descent.

While I waited for him to splash down, I couldn't help but think how lucky this guy was. The weather conditions couldn't have been more favorable. Ceiling and visibility were unlimited, the wind was next to nothing, the sea calm, and the water temperature was in the high sixties. I was standing by to pick him up, two of his squadron buddies were overhead, and the cruiser was ready to assist if needed. Talk about holding a pat hand.

I kept the helo far enough away so that rotor wash wouldn't influence his water entry or separation from the chute.

At about 100 feet above the water, he looked to be in great position for splashdown. He entered the water smoothly, and because there was no wind, his chute quickly collapsed.

I started to move slowly toward the pilot who had not yet appeared on the surface. Thirty seconds passed, and he was not up; then, as his time in the water neared 1 minute, I suddenly felt apprehensive.

"Come up, damn it, come up," I yelled out. "What are you doing, man? We're ready to help you."

Now there was no time to waste. I had my crewman don the sling, and when we were over the chute, I lowered him into the water. While this was going on, I called the ship and apprised the CO of the situation. The captain immediately launched a whaleboat for the area.

My crewman did his best to locate the pilot, but it was to no avail. I gave him the signal and hauled him back up into the helo. By now, about 7 minutes had elapsed since the pilot entered the water, and that sick feeling one gets when he realizes a tragedy has occurred overtook me.

This emotion was quickly followed by that one of boiling madness I talked about earlier. Why had this pilot fouled up? Was it complacency – the feeling that all was in his favor and he needn't worry? Or was it a case of fear? Or did he forget everything he had learned (or quite possibly never learned) about parachuting into the water?

The whaleboat arrived on the scene, and it took those aboard almost an hour to extricate the pilot from his chute. His body was finally hauled aboard, and the boat returned to the cruiser.

Later that day, I talked with the doctor to find out exactly how this pilot had died. The cause of death was drowning, and there wasn't a mark on his body. What a waste of life – a completely unnecessary waste. A wife and two kids in California were in for some bad news.

This tragedy happened in May, 1953. The cruiser involved was SAINT PAUL (CA-73). The helo was an H03S. The jet pilot was from BOXER (CV-21), and he was flying an F-9 *Panther*. It occurred south of the bombline, in friendly waters, just off the South Korean coastline.

I've long since retired from the Navy, but I'll never forget that day. The thought keeps entering my mind – I wonder how many similar mishaps have happened to other pilots since that time (*164 through 30 June 1973 – Ed.*) and how many more will happen in the future?

*The problem of getting rid of your parachute in the water has been with us too long. We're still relying on the old make-sure-you're-trained approach to the problem. But in the near future, we have hope of a solution.*

*That solution will be to automatically rid you of your chute and inflate your inflatables on water contact. Hopefully, a system called MAN/SAFE (the acronym for Manual/Automatic Separation and Flotation Equipment) complemented by an item called the encapsulating liferaft will eventually work so that you won't have a parachute divestment problem to worry about, and you won't even get wet.*

*Sound futuristic?*

*Both systems have already been "jumped" successfully at El Centro. – Ed.*

# An Icy Tale

A FLIGHT of two H-3s departed NAS Midcoast for NAS Southside on an IFR flight plan. OAT on deck was 12°C, altitude requested was 7000 feet and there was a solid cloud deck from 2000 feet to over 8000 feet, *with a forecast of possible rime ice* above 6000 feet.

As the temperature dropped below 10°C during climbout, lead called for No. 2 to turn on his anti-ice equipment. Windshield anti-ice was selected. No. 2 had to secure it, however, because the cockpit fogged almost immediately. As the section reached assigned altitude, they could not maintain visual contact. They split up.

After a short time, No. 2 began to experience moderate vibrations similar to blade out of track "vibes." Moreover, $N_g$ and $T_5$ rose, and icing on the fuselage was visible. Center was contacted and No. 2 was cleared to climb to 9000. The helo broke out at about 8400 feet. However, the engine readings worsened.

Both engines were at topping, $N_r$ dropped to 97 percent, rate of climb was a mere 100 feet per minute, and airspeed was only 70 KIAS. There was an estimated ¾-inch sheet of ice on the windshield. Anti-ice equipment was again set to LOW. Approximately 10-15 seconds later, fire was reflected in the lower right-hand side of the copilot's windshield. Three cracks appeared in the windshield, and smoke began pouring from above and left of the throttle quadrant.

The pilot secured the anti-icing system and declared an emergency. Center gave him a radar-vector descent through the clouds. The fire went out during the descent, but the pilot made a precautionary landing at a military airport. (It kind of makes you curious about the amount of ice he must have had on the main rotor blades.) When asked about it after shutting down, he acknowledged heavy icing of the helicopter's fuselage and control surfaces with some possible light engine icing.

It is suspected that ice buildup on the windshield was so great that rapid change in temperature by the anti-ice system on LOW caused the windshield to crack and the electric circuitry to fail. Fire and windshield implosion could possibly result under such circumstances. A recommendation was made that a warning be included in NATOPS that flight into an icing environment, even with an ice deflector installed (as this bird had), should be conducted only in an emergency situation for a short duration.

General NATOPS, OPNAVINST 3710.7F, in paragraph 325b says, "Flights shall be planned to circumvent areas of forecast atmospheric icing and thunderstorm conditions whenever practicable." When there is no emergency involved, it just makes good sense to avoid suspect areas.

# Runway Condition Reporting

*FPO* – When CDR Glotz concluded his practice ALFA strike briefing with "any questions?" we were surprised when the duty nugget asked what the code word for cancel-and-return-to-the-ship was. CDR Glotz thought for a second and said, "If that decision is made, I will say cancel and return to the ship."

Now, that's straight thinking and straight talk. Why can't I get the same kind of reaction when I ask the tower for runway condition? Instead, I get an "RCR-13" or an ambiguous "FAIR." Why isn't the reply "The runway is wet, and rollout will be increased by as much as 45 percent."

I wouldn't have to break out my computer or even an IFR Enroute Supplement to know whether I had sufficient runway to stop without my hook. A simple question and a simple answer in my mother tongue is all I want. Let's leave crypto to the spooks when the gear is down.

LT D. H. Ryder

• **Is "Braking action FAIR" any more ambiguous than "Your landing rollout may be increased by as much as 45 percent?" Both are inexact, especially when you consider the numerous types of aircraft (with different braking characteristics) involved. Beyond that, the best explanation as to why RCRs or equivalent braking action is given the pilot instead of a plain language estimate of increased landing roll is this:**

**The whole subject of braking action is very complex. RCRs represent an attempt by the Air Force to reduce the complex problem to terms with maximum utility for the pilot . . . and this means first and foremost, the Air Force pilot. Theoretically, the Air Force pilot can compare the RCR to a table in the applicable USAF flight manual and come up with a predicted ground roll distance for his particular aircraft. No such tables are available in NATOPS manuals. Hence, the note in the IFR Enroute Supplement on "USN use of RCRs." The Navy pilot, however, may not be as handicapped (in comparison to Air Force pilots) as it appears – at least as far as wet runways are concerned.**

**Recent Air Force correspondence indicates that decelerometer readings (from which RCRs and some Navy estimates of braking action are derived) can be used to conservatively predict stopping distances on snow and ice covered runways, *but cannot be used accurately to predict aircraft stopping distances on wet runways.***

**HQ USAF reports that there is considerable effort by the Air Force research and development community, working together with FAA, NASA, and industry, to develop a suitable operational system for predicting aircraft stopping distances on all surfaces. It is the position of the Air Force agencies developing this system that *the existing data base for predicting aircraft wet runway stopping distances is inadequate.* The Navy, of course, is in the same boat insofar as the data base is concerned.**

**You should be aware that there is some conflict in Air Force Manual 55-48 as to what information will be provided the pilot by Air Force towers. In one place, the manual indicates that the RSC (runway surface condition) *and* the RCR will be given to the pilot of a landing aircraft. In another place in the manual, it is stated that only the RSC will be reported for *wet* runways. AFM 55-48 is in the process of being revised to eliminate this conflict. The revision is expected to provide that only the RSC will be reported for *wet* runways. It is also expected that CNO will initiate a revision to the IFR Enroute Supplement note on "USN use of RCRs" as necessary to reflect the revision of AFM 55-48.**

**ATP 7110.8C requires controllers to report factual information on runway surface conditions as reported by airport management. But RCRs or decelerometer readings will not be available or reported (with a few exceptions) by Navy towers. ATP 7110.8C requires that controllers give estimates of braking action to pilots. Braking action will be characterized as "good," "medium" (or "fair"), "poor," or "nil," as received from other pilots or airport management. Included will be the type of aircraft or vehicle from which the braking condition estimate was received.**

**You may be sure that extensive efforts are being made by the armed services, FAA, NASA, and ICAO to develop a simple, standardized system for accurately estimating and reporting runway braking action.**

**In the meantime, watch those wet runways.** ◄

This article deals with P-3 aircraft, but the basic thoughts presented apply equally to all multiplace aircraft.

# P-3 Crew Coordination During Inflight Emergencies

By LT Jim Humphrey, VP-17

ACCIDENT summaries have pointed to flight crew error and mechanical failure as the leading causal factors in aircraft accidents and crewmember fatalities. Generally, flight crew error is involved in approximately one-half of all accidents – material failure, about one-third. With the increasing incorporation of safety into aircraft design and equipment, however, material failure becomes a much less direct determinant of aircraft mishaps.



The P-3 aircraft is an "almost" self-sufficient ASW system, with each critical subsystem having at least one backup. Very few situations exist where material failure of a single subsystem will be the sole cause of an accident or fatality. Failure of a single crewmember, however, to correctly perform the procedures required to rectify a simple failure of one subsystem can readily lead to failure of additional systems or personal casualty, i.e., a compound emergency. Thus, each failure (material and human) can easily set the stage for the other, and there is a great likelihood that the next accident will be classified as preventable, involving obvious flight crew error.

Error of any sort is overcome through *preparation.* Preparation is achieved through knowledge, practice, mental awareness, and, where there is more than one crewmember, coordination. The execution of emergency procedures has become an all hands function, with each flight crewmember being a link to success or failure. With this in mind, let's take a look at some of the major emergency situations that confront P-3 flight crews and discuss some things that do not appear on our placards and checklists.

**Fire of Unknown Origin**

The first step in combating this situation is not to activate the fire bill; the first step is *preparation.* Electronic bays should be free of loose gear, and equipment should be securely shock-mounted. Minor equipment discrepancies should be viewed as possible fire sources. How often has a malfunctioning electrical appliance at home signaled you with smoke and flame? Your aircraft is no different, and in most cases, the controlling circuit breakers to inoperative equipment should be pulled and tagged.

Each crewmember must be aware of the proper procedures to follow when fires occur during preflight when pilots, TACCOs, or flight engineers may not be aboard. Complete knowledge of radio procedures, ground control frequencies, and parking locator numbers become mandatory. Additionally, each crewmember should know how to secure all electrical power to the aircraft.

Now, let's consider a fire of unknown origin in flight. The pilot will receive the initial report and will activate the fire bill. This initial report is critical, considering that the degree of action taken in the cockpit will be predicated on its preciseness. If a smoking 1A hydraulic pump is reported as a "fire in the hydraulic service center," a completely different course of action might be taken than had it been correctly reported as a "smoking 1A pump." Correctly reported, the simple securing of the 1A hydraulic pump switch will quickly rectify the problem; incorrectly reported, the needless securing of several electronic buses and their related systems will occur, and the exact source of the problem may remain undetermined, thus compounding the situation.

With activation of the fire bill, every conceivable place for a fuselage fire should be inspected. With a complete tactical crew aboard, assignments are in accordance with NATOPS; however, alterations and assignments must be clearly specified at the preflight brief when only a partial crew is assigned.

If the fire persists, the checklist calls for a systematic securing of electrical buses. If time permits, the crew should be forewarned to permit functions which might not otherwise be possible with electrical monitoring. Prior to securing Bus-B, consideration should be given to the loss of hydraulic power, fuel transfer, aft lighting, armament power, and the ability to restart engines 1 and 4.

Continued

### Ditching

A successful ditching begins with preflight *preparation,* including a thorough inspection of aircraft and personal survival equipment. All equipment should be secured to the aircraft or properly stored, with the knowledge that loose gear may quickly become lethal missiles. When a partial crew is assigned, provisions should be made at the briefing for detailed assignments of survival gear. Furthermore, each crewmember must be familiar with the duties of every other crewmember to ensure that the incapacitation of a single crewmember does not hamper the overall success of the ditching.

Once the decision to ditch has been made, it is paramount that the outside world be notified. Radio operators should already have one HF radio tuned to a sure bet (preferably HF-1). A signal for immediate ditching should imply immediate radio transmission by the radio operator. There is no need to wait for the navigator's position; notify someone immediately of the impending emergency while you still have the opportunity, or it may be hours before you're even missed. In like manner, the copilot should attempt immediate contact on UHF or VHF frequencies, the radar operator should provide the pilot with a bearing to the nearest ship or land, and the navigator must quickly pass a position to both the radio operator and copilot. All crewmembers should be setting condition five, stowing loose gear, and reviewing ditching procedures.



Prior to water impact, each crewmember should position himself with his head firmly against his headrest. When the aircraft has stopped all forward motion, *primary* concern must be given to *crew evacuation.* If one crewmember is injured, others will be involved in his evacuation; thus, some personnel will be delayed, if not stopped, from removing their assigned survival equipment. Here again, it is imperative that each crewmember be familiar with the duties of every other crewmember.

### Bailout

Preflight preparation should include thorough crew briefs, including indoctrination in the hazards of bailout at high altitudes. Crewmembers should be familiar with parachute inspection procedures, and antiexposure suits must be available. NATOPS specifies that bailout should not be attempted in lieu of ditching when over water, away from land. Many of the considerations that were previously mentioned for ditching also apply to bailout, including communications. Further consideration should be given to water temperature, crewmember dispersal, and crewmember injuries.

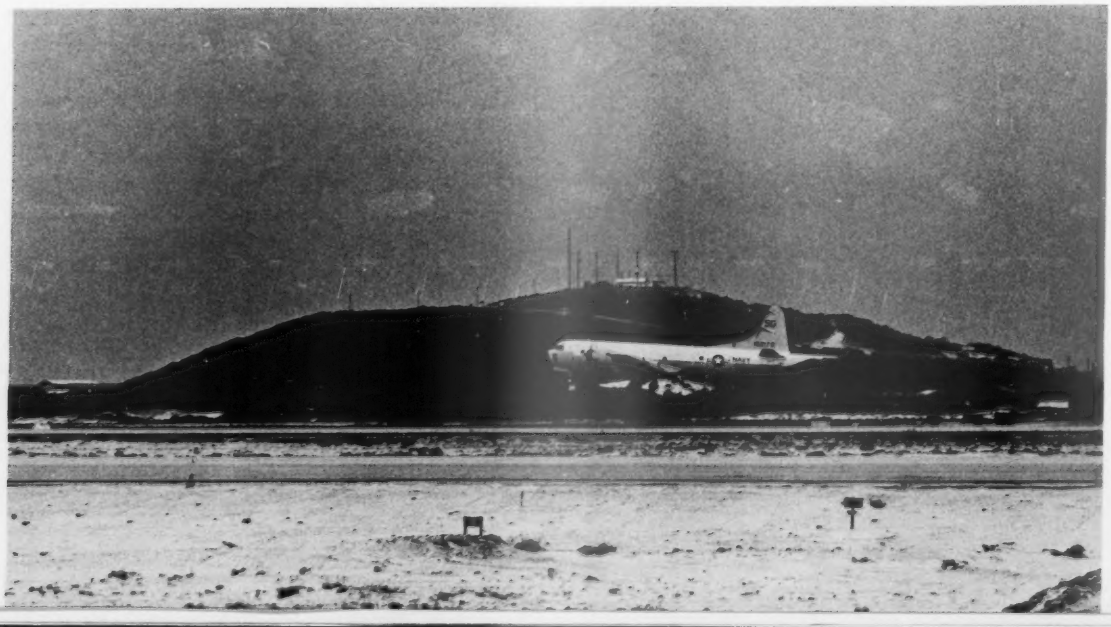
Once the decision has been made to bail out, the pilot should announce that the aircraft has been depressurized prior to any attempt to open the main cabin door; if smoke removal procedures have been executed, hatches must be closed prior to this step. The aircraft should be flown in a tight circle, and prompt evacuation of crew, liferafts, and Gibson Girl should be effected to prevent dispersal over a wide area.

### Conclusion

It is not the intent of this article to discuss all emergencies that will or can confront a P-3 flight crew, or all the possible considerations associated with any given emergency. These, after all, are almost endless.

It is, however, considered essential that we in the P-3 community again restress preparedness. For only through individual crewmember knowledge and awareness, combined with inflight and ground drills, can we achieve the crew coordination necessary to successfully cope with any emergency.

Courtesy COMPATWINGSPAC



# notes from your flight surgeon

## Where're the Kochs?

AFTER a very low altitude ejection on takeoff attempt, a pilot had trouble separating from his parachute. As a result, the wind dragged him for more than 1000 feet. He landed feet first, falling on his hands, then rolled on his back.

The pilot had trouble finding his Koch fittings. When a pilot straps in, the Kochs are on the front of his shoulders. After parachute deployment, however, tension of the parachute risers pulls the fittings above the shoulders to approximately eye level.

"I reached for the fittings, but forgot they were up so high," he recalls. "The wind continued to drag me in gusts. Finally, I managed to release the fittings which collapsed the chute. I don't remember removing my gloves, but my hands were bare and there was a gaping wound in my right palm."

While he was being dragged, his hands were badly scraped, making it harder for him to release the fittings once he had located them.

All pilots in the squadron have been briefed on the problem, and parachute suspensions have been conducted to train them in locating the Koch fittings under simulated parachute descent conditions.

## Preflight Your Passengers

ALL PASSENGERS on an R&R flight that terminated in a soft crash landing wore protective helmets and lifejackets and remained strapped in their seats throughout the entire flight. Before the crash landing, they assumed crash positions. On impact, the helo rolled on its left side. They unbuckled and exited the aircraft.

"In my opinion," the investigating flight surgeon states, "the extensive preflight briefing of passengers and equipping them with cranial helmets must be credited with a major role in preventing even minor injury."

*Thorough preflight briefings of passengers on survival equipment and procedures save lives.*

## Effortless Repeat

WATER survival procedures after ejection were carried out smoothly and efficiently by both crewmen. They reported that they felt it was an effortless repeat of their training exercises.

## Consumer-oriented Training

LET'S make sure survival training is consumer-oriented, says the flight surgeon investigating an F-4 accident.

When time came for helo pickup, both *Phantom* ejectees' first reaction to the lowered sling was to use the horse collar because they had trained with it in DWEST. It would have been much simpler if they had hooked up.

When the RIO tried to get into the collar, he found that his LPA-1 life preserver was too bulky. Finally, he located the attachment hook for his hoist ring, hooked up, and was hoisted aboard.

The pilot lost his grip on the collar lowered by the first helo because he had a cut hand. By the time a swimmer from a second helo arrived, the pilot was exhausted. The swimmer attached the pilot's snap hook to the hoist, and they were both retrieved.

"Survival training must be consumer-oriented," the flight surgeon states, "and for the lessons learned to be useful in a real emergency, the training should be conducted using the equipment which will be worn by the trainees in flight."

## Dye Marker

AFTER ejecting and landing in the water, both the pilot and B/N of an A-6 popped smokes and used their dye markers to attract SAR aircraft.

"These signal devices worked as advertised," the squadron aircrew survival equipment officer reports. "They were all that was required for detection and pickup."

Before his ejection and rescue, the B/N didn't carry a dye marker pouch on his LPA-1. The one he used was in his raft.

"I carry one in my LPA now, though," he says.

Seeing that the pilot had his dye marker out, he decided to get his out, too. He unzipped his raft equipment bag and easily found the yellow packet. He dipped the dye marker in the water a few times. Nothing happened.

"I pulled it up to my face and read the words 'Pull Flap to Open' and felt a little foolish," he reports.

He pulled the flap as directed, dipped the pouch into the water again, and "immediately the sea came alive with green color."

Rescue speedily followed. ◄

## Contributor's Corner

*Spin/departure training in sweptwing jet aircraft is a controversial subject. There are those who argue that any possible gains are outweighed by the potential for training losses. On the other hand, there are many, including the author, who believe positive gains will be achieved. This article is presented as one man's opinion on a subject of considerable importance to professional naval aviators. – Ed.*

# SPIN IT!

By LCDR Richard K. Pottratz
Naval Air Test Center

Spins? Who needs them?

Teach the stud/nugget/old pro to *avoid* spins, not perform them. Get in a spin in present day tactical airplanes and you're dead – or at least have lost an airplane. Right? *Wrong!*

With the exception of the rarely encountered flat spin modes in the F-4 and RA-5, all tactical fighter-type Navy airplanes can be consistently recovered from all out-of-control, high angle-of-attack conditions.



Why then, you may ask, have there been nearly 200 A-4, A-6, A-7, F-4, and F-8 airplanes lost in out-of-control flight over the last two decades, especially when half of those out-of-control situations were entered high enough to effect recovery? The obvious answer is that pilots didn't follow the correct procedures for recovery. Why? Because they were not prepared for the situation. A sudden departure/spin is frightening and disorienting. Adrenalin surges. Without some familiarity in departures/spins, the pilot is scared and confused. The airplane does not respond normally to control inputs, and some action is required. The departure/spin is also psychologically distressing, and too often the pilot does not take the correct action, usually control neutralization, and another solid airplane is needlessly lost.

Student aviators learn to perform two-turn, erect spins in the T-34 before their first solo. This spin training continues during postsolo flight training in the T-34. With the exception of one spin flight in the T-2, our student aviators get no further spin training. These pilots could likely find themselves in a Fleet F-4 or A-7 squadron without having any additional training in the high angle-of-attack/out-of-control region of flight. Is it any wonder that not every pilot is successful in recovering from his first departure or spin when it occurs unexpectedly and he is forced to rely on spin experience gained years before? In the vernacular made famous by Grandpa Pettibone, "Why in tarnation don't we show these fellers what departures and spins are all about b'fore we expect them to bat 1.000 on recovering from unintentional maneuvers?"

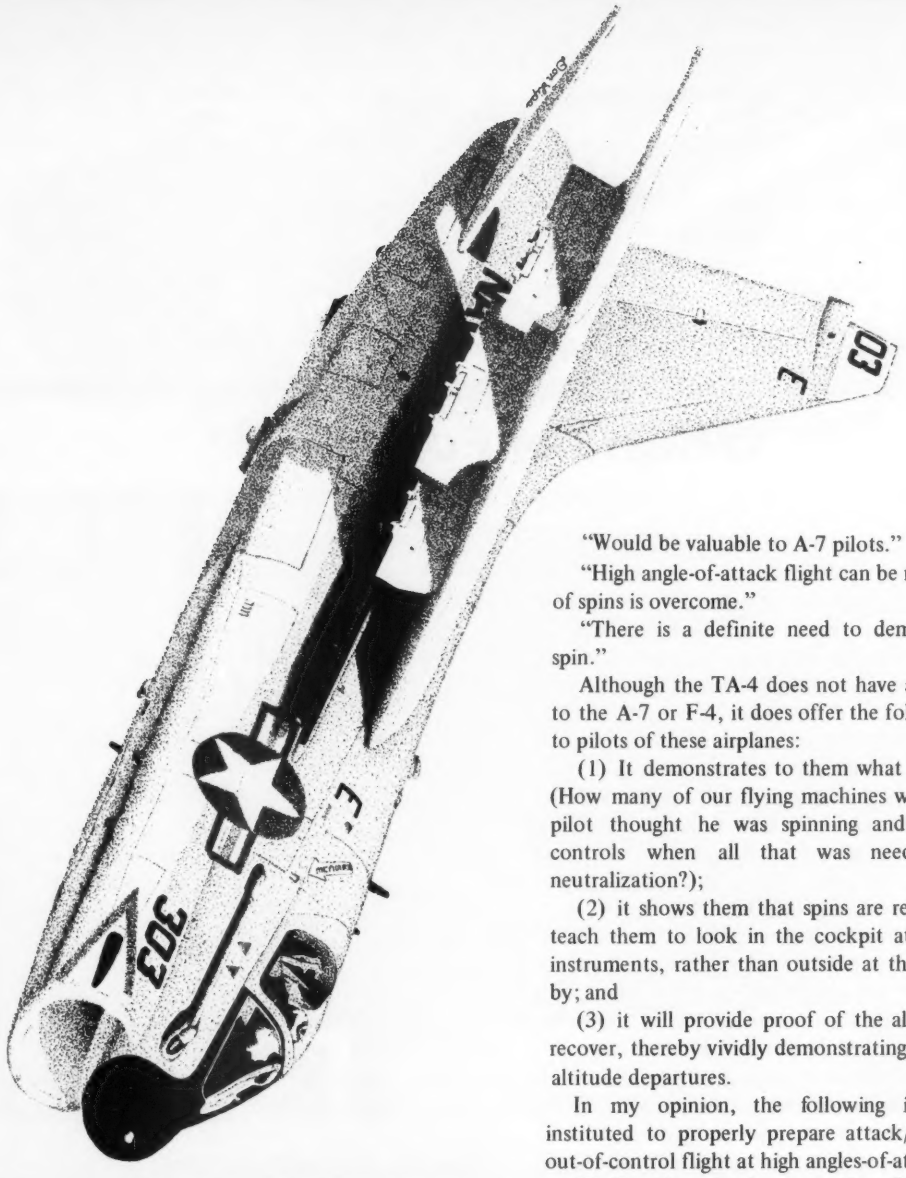
Out-of-control accidents will continue until either pilots are given adequate training in high angle-of-attack situations or until airplanes are made "spin-proof."

When sweptwing, jet airplanes entered the Navy's inventory in the late fifties, intentional spins began to be forgotten. Many members of the attack/fighter community considered spins to be maneuvers which likely as not would result in ejection. Because they were an "unknown," spins were feared!

Let's "turn on the lights" and expose spins for what they really are! Airplanes currently in the inventory can be used to safely demonstrate spins and provide pilots with experience in departures. Thorough testing has been accomplished in the F-9, A-6, A-7, and TA-4, and all these airplanes were recommended for use in intentional out-of-control, high angle-of-attack flight. With symmetrical loads, the A-7 will recover from any maneuver simply by releasing the flight controls. What could be more simple? Yet, departures are not routinely taught.

Following the TA-4 spin tests at the Naval Air Test Center, 17 Fleet/training command pilots were given an erect spin demonstration flight in the TA-4. *All* felt that the airplane should be cleared for intentional erect spins. Some of the comments recorded during the debrief of these 17 pilots were:

"No more apprehension about spins."
"Rewarding experience – all jet types should spin."
"Students should see this on their first ACM flight."
"Brought back memories of the old days."
"Great confidence builder."




"Would be valuable to A-7 pilots."

"High angle-of-attack flight can be mastered once fear of spins is overcome."

"There is a definite need to demo the intentional spin."

Although the TA-4 does not have a departure similar to the A-7 or F-4, it does offer the following advantages to pilots of these airplanes:

(1) It demonstrates to them what *is* or *is not* a spin (How many of our flying machines were lost because a pilot thought he was spinning and put in recovery controls when all that was needed was control neutralization?);

(2) it shows them that spins are recoverable and can teach them to look in the cockpit at the proper flight instruments, rather than outside at the horizon flashing by; and

(3) it will provide proof of the altitude required to recover, thereby vividly demonstrating the danger of low altitude departures.

In my opinion, the following items should be instituted to properly prepare attack/fighter pilots for out-of-control flight at high angles-of-attack:

(1) Provide spin demonstration flights of increased scope in the T-2 airplane to student naval aviators. With improved lap belt (vertical) restraint, this airplane can be safely placed in some truly disorienting maneuvers, yet will recover from the inverted modes which develop simply by neutralizing controls. These maneuvers would have to be demonstrated by highly-motivated, well-qualified instructors. (Initial training of these flight instructors could be conducted by NATC spin project pilots.)

(2) Clear the TA-4 for intentional, erect spins and continue spin demonstrations in advanced flight training.

(3) Demonstrate erect spins in the TA-4 to every pilot enrolled in an annual instrument flight training


About the Author

LCDR Pottratz entered the Navy in 1956 via the NAVCAD program, receiving his wings in March 1959. Since that time, he has amassed over 4100 hours flight time and has seen duty in VA-34 and VA-22. He is a graduate of the British Empire Test Pilot School and is presently assigned to the NATC as a test pilot. In this capacity, he has performed spin tests on the TA-4 and is currently involved in the A-4M spin test program. He has performed spins in the T-1A, T-2, TA-4, A-4M and the British *Hunter*.

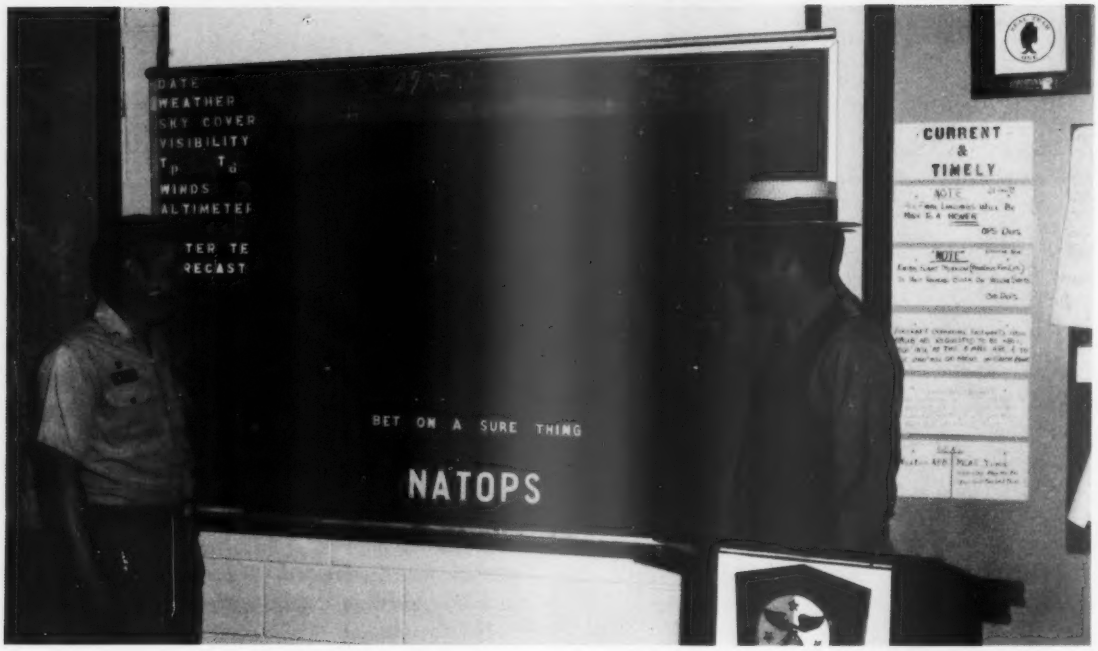
syllabus. This would provide a continued spin refresher on a regular basis.

(4) Provide A-7 pilots with departure training in the A-7 under controlled conditions in the CRAW and in the squadron. The A-7 can be departed safely!

By instituting these procedures, pilots will overcome any doubts as to their ability to recover from spins, learn not to panic, and better understand and respect the capabilities of their airplanes. With improved spin training, and by continuing the effort on improving the departure/spin characteristics of aircraft, the out-of-control accident rate will be improved.

Opponents of this proposal will say, "Train the pilot to avoid high angle-of-attack, out-of-control situations, and the problem is solved." Rubbish! We've always had inadvertent departure/spins, and we can expect to continue to have them simply because of the way the airplanes are designed and because of tactical military requirements. Spin experience *will* help prepare the tactical pilot for inadvertent departures/spins. ◄

# Wheels of Fortune




H-46 NATOPS at Helicopter Combat Support Squadron THREE takes on a new look.

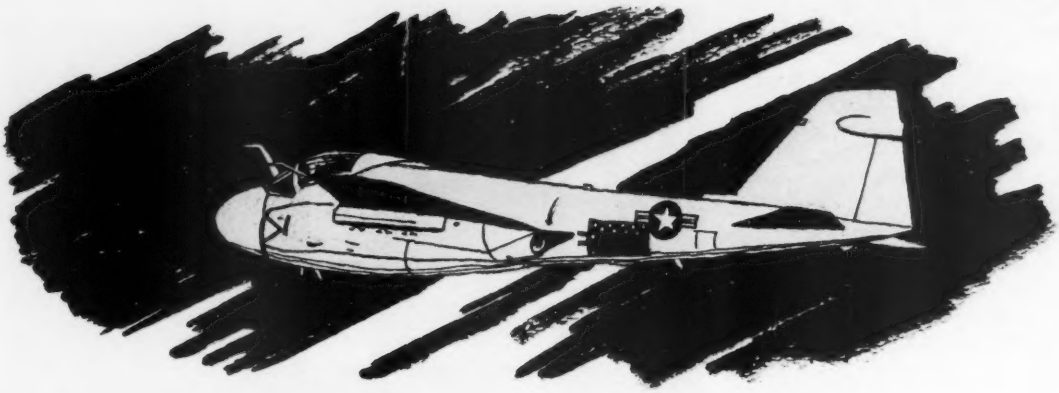
Placed any bets lately? As most of us know, the odds are generally stacked against us. There is, however, one sure bet all of us in aviation can make – *NATOPS!* Betting on NATOPS isn't a gamble – it's a sure winner!

With this in mind, LT "Frito" Vazquez, NATOPS Officer at HC-3, developed an interesting and effective method of ensuring that all pilots review their emergency procedures frequently.

He used the configuration of the tandem rotor H-46 to develop a double-barrel roulette wheel. The aft rotor disc determines the emergency procedure for the day; the forward disc determines the pilot who will give and explain that procedure. On the aft rotor, there are three possibilities that all pilots will be given a NATOPS procedures test.

Each pilot waits with bated breath as the wheel spins and the lucky winner is announced. The "game" has been a very effective learning tool in enhancing the overall NATOPS posture and professionalism within the command.

CDR Rockwell, the commanding officer of HC-3, spun the "Wheels of Fortune" the first time as LT Vazquez looked on, dressed for the occasion.



## Double Generator Failure – Intruder Style

By LT Robert Wilkes, USN

WHILE returning to USS Homeplate in the Gulf of Tonkin after a night combat mission, the pilot of the A-6A *Intruder* told his BN that his side of the airplane was 4.0 and settled into his night CCA approach with all the concentration necessary for this routine, but never unexciting, procedure. It was a fairly clear night with no moon and only a few low, patchy clouds. The *Intruder* was picked up by final approach and started down the glide slope. Passing 1000 feet, about 2½ miles out, a loud ZOT was heard as all electrical equipment failed simultaneously; and sea, sky, and cockpit turned the same shade of black. Both generators had failed at once, with no warning.

The pilot knew immediately what to do. He reached for the RAT handle – its location being well-known since stowing the RAT is part of the pre-launch procedure. This time, however, the large, familiar T-handle seemed to elude his hand. After several seconds of groping around, the handle was located, and essential electrical equipment was restored. (The pilot had difficulty in finding the handle because he had his seat set up high for landing to get a better view over the instrument panel. This is in contrast to a low seat setting which the pilot normally uses for launch and practice sessions in the flight simulator.)

At this time, visual contact with the ship was made, and the pilot decided to continue the approach. He told the LSO that he'd had an electrical failure and that he would have no external lights. The pilot found himself slightly high and left at a quarter mile, and although a landing could have been made from that position, he felt uncomfortable and decided to take it around. A waveoff and a turn into the bolter pattern were executed using the ship's lights as an attitude reference.

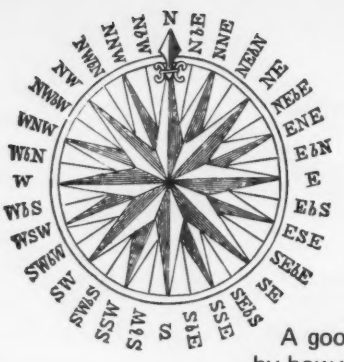
The pilot then went back on the gages, placing his faith in the usually outstanding VDI-INS platform combination. This system takes its attitude information from the Inertial Navigation System (also called the platform) and presents it on a VDI (Vertical Display Indicator).

The VDI told him that he was straight and level, which was reassuring, but in a few seconds, it became obvious that this instrument was frozen. A crosscheck of the VGI indicated a 60-degree bank in a descending turn!

The pilot leveled his wings and climbed to 2000 feet for a breather. The BN switched into MAG/VGI which takes the platform out of the system and displays the VGI on the VDI. The crew then found that the left generator could be reset and turned on the anticollision light so they could be seen by the LSO.

From this point, an uneventful recovery was made. The cause of the problem was found to be a failure of the starboard CSD/S shaft coupling (PN 383266) and the subsequent destruction of the associated seal which allowed excessive amounts of oil to enter the starboard generator. When the starboard generator failed, the port generator refused to take the sudden load and dropped off the line also.

Two lessons were learned that should be of value to all *Intruder* pilots and may have applications in other types. First, know where your RAT handle is from the elevated seat position. Secondly, any complete interruption in electrical power will render the platform useless, and the BN should immediately switch to MAG/VGI. What started out to be a routine recovery rapidly became a series of exciting moments aloft in the black. ◄



# Letters

A good pilot is judged not by how well he *gets out* of a bad situation, but by how well he *avoids* it.

*Interceptor*

## AN/URT-33 Radio Beacon

*FPO, New York* – The survival episode following the recent loss of an SH-3H at sea brought out some interesting points regarding the AN/URT-33 radio beacon.

This device is activated by an ON-OFF switch on top designed in such a way that the device is emitting when the word ON is showing and secured when OFF is showing. (See Fig. 1.)

The written instructions begin: "1. To arm, slide switch to ON." Taken literally, this would turn the device off, since sliding the switch to ON uncovers the word OFF (Fig. 2). To compound matters, from certain angles of view, *both* words are visible when the switch is thrown fully to OFF.

A minor point? Perhaps, but directly responsible for delaying location of a four-man crew down some 40 miles from an LPH. The SAR helo picked up intermittent fixes because the survivors, unsure as to whether the beacon was on or off, alternated switch positions on their three devices (one man was never issued one) to ensure that at least one was emitting.

In the security of homeplate, several aviators were asked to quickly arm their URT-33s. Some did it correctly, others incorrectly, and still others had to stop and think after reading the instructions. Now, obviously, the activation of

Fig. 1

1. Top view, AN/URT-33 Radio Beacon switch has been slid to cover "OFF." Device is now activated.

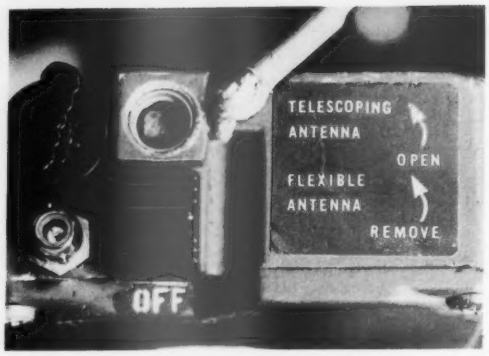



Fig. 2

2. Top view, AN/URT-33 Radio Beacon switch has been slid to cover "ON." Device is now deactivated.

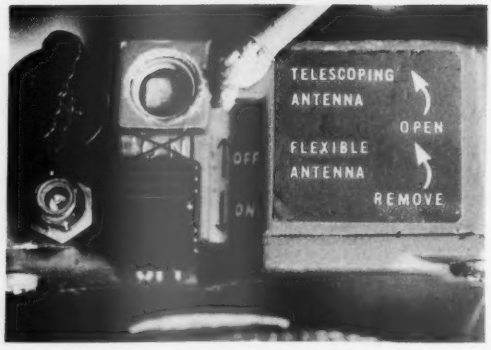



Fig. 3

3. Top view, AN/URT-33 Radio Beacon with suggested revision of switch.

**APPROACH welcomes letters from its readers. All letters should be signed though names will be withheld on request.**

**Address: APPROACH Editor, Naval Safety Center, NAS Norfolk, Va. 23511. Views expressed are those of the writers and do not imply endorsement by the Naval Safety Center.**

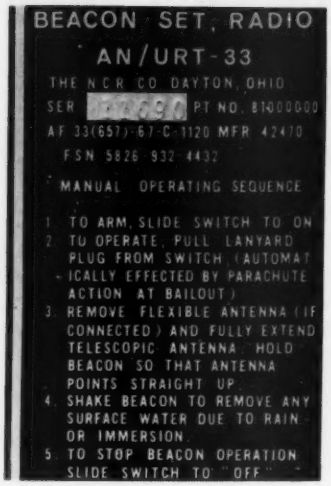

BEACON SET, RADIO
AN/URT-33
THE NCR CO DAYTON, OHIO
SER [redacted] PT NO. 81000000
AF 33(657)-67-C-1120 MFR 42470
FSN 5826-932-4432
MANUAL OPERATING SEQUENCE
1. TO ARM, SLIDE SWITCH TO ON
2. TO OPERATE, PULL LANYARD PLUG FROM SWITCH (AUTOMATICALLY EFFECTED BY PARACHUTE ACTION AT BAILOUT)
3. REMOVE FLEXIBLE ANTENNA (IF CONNECTED) AND FULLY EXTEND TELESCOPIC ANTENNA. HOLD BEACON SO THAT ANTENNA POINTS STRAIGHT UP.
4. SHAKE BEACON TO REMOVE ANY SURFACE WATER DUE TO RAIN OR IMMERSION.
5. TO STOP BEACON OPERATION SLIDE SWITCH TO "OFF"

Fig. 4. Operating instructions, AN/URT-33 Radio Beacon.

survival gear should be an automatic response, right?

Two points seem particularly pertinent here: 1. Familiarity with personal survival gear is best accomplished *before* it is needed. (I think I've heard that before.) 2. A simple arrow alongside the switch clearly indicating switch positions (Fig. 3) can make life a lot simpler, especially for the survivor in moderate shock following a bad experience and an unwelcome cold water immersion.

LT F. R. Tormes, MC
Flight Surgeon, HS-15

**● You're right about the beacon switches – what you see is what you get. When the switch reads ON, the beacon is on. When the switch reads OFF, the beacon is off. The trouble is in the directions (Fig. 4). A sentence added to No. 1, for instance, that "The switch is ON when word ON shows" might clarify things, along with a similar change to No. 5.**

**We checked this matter out with NAVAIRSYSCOM and learned that the Air Force procures this item for the services. As a result of your letter, NAVAIRSYSCOM has taken this problem up with the Air Force. Perhaps future buys of the beacon will have clearer directions.**

**In the meantime, everybody, make sure you know how to operate the AN/URT-33 beacon so well you don't need the fine print.**

### FLIP Changes

THE DEFENSE Mapping Agency, St. Louis, Missouri, has notified the Naval Safety Center of the following changes to FLIP documents:

● *Antigua Island-Ascension Island Route Inset.* A new graphic depicting the route between Antigua Island (Cooledge NDB) and Ascension Island in the South Atlantic will receive initial publication in the 21 July issue of C&SA FLIP Enroute Chart A-1.

● PFSV (pilot to forecaster service) is changing to PMSV (pilot to metro service) and will be phased into future issues of FLIP products beginning with the 16 August 1973 issue.

## Flight Gear

*MCAS CONUS* – The other day on the flight line, I saw a Det Group Commander enter the copilot side of a UH-1E without nomex flight suit, flight boots, nomex gloves, or SV-2. The crew chief offered him this equipment, but was waved away. The officer wore the summer service working uniform.

Why this happened is beyond me. But it seems to me that this individual has lost all survival knowledge and common sense he must have learned as a pilot.

What can we do about this type of situation?

I think it can be prevented by calling this unpardonable sin to the attention of all group commanders to ensure compliance with NATOPS. (Incidentally, this is also mighty detrimental to the crew chief's attitude about flight safety.)

Crew Chief

**● We're behind you 100 percent. When it comes to wearing required personal survival equipment, senior pilots should set an example for everybody. Unfortunately, your letter is similar to several we've received lately on the same subject.** ◄

### CORRECTION

The article "Communications Gap" in the June 1973 APPROACH, referring to the A-6A, contains the statement (on page 26) that "NATOPS recommends ejection at 500 lbs." This statement is incorrect; NATOPS does not address this subject.

### Movies Needed

FOR the past few years, the Naval Safety Center has been using a four-minute movie of Navy accidents, with a "James Bond" type musical background, for motivational purposes in accident prevention presentations. Because the movie has proved so popular, it is being updated for Navywide use. To update the film, we have an immediate requirement to gather movies of accidents of all types, particularly those showing the actual occurrence of the accident. Commands may assist in meeting this requirement by publicizing the need in newspapers, Plans-of-the-Day, etc. Material received will be reviewed for suitability, copied, and if desired, returned as expeditiously as possible. Mail all material to:

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Publisher

Our product is safety, our process is education and our profit is measured in the preservation of lives and equipment and increased mission readiness.

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NavAir 00-75-510

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Credits

October's cover by staff artist Blake Rader shows the Navy's C-2 *Greyhound* in a CV landing that makes up part of the daily routine for this hardworking bird. **Pg. 27** Art: Don Lips. **OBC** Photo: LCDR Ronald Maratea.

# Plus Ça Change, Plus C'Est La Même Chose*

In aviation you will find,
With a safety frame of mind,
The diversity of mishaps is absurd.
When you think that you have written
All the ways that planes are smitten,
Someone finds another way to bend a bird.

Although full of admiration
For the bender's 'magination,
We reflect that it's both he and we who pay.
So we look at mishap reasons
Old and new across the seasons,
And wish and wish both kinds would go away.

As we sit and stare with wonder
At some other fellow's blunder,
And are smug 'cause we are sitting high and dry,
It behooves us to take thought
'Bout the times *we* were not caught,
That "there but for the grace of God go I."

If you react with mild disgust
(As at times of course you must)
To the foolish things the others sometimes do,
Do you who show chagrin
Ever think that those who sin
Might have learned some of those foolish things from you?

Avoid those situations
With the hazardous temptations
That beguile the reckless, feckless, and unwise.
Carelessness oftimes repeated
Causes odds to be defeated,
And next time it could end up with – Surprise!

But though all of us have hunches
On the hows and whys of crunches,
There's a simple point that stands out deadly clear.
When you *know* that what you're doin',
Often leads to rack and ruin,
Then don't do it. Men and birds are far too dear.

*LCDR Norman E. Lane, MSC, USN*

* The more things change, the more they stay the same.

# SECS

## Single Engine Control Speed

## Everybody needs it!

Idea contributed by CAPT Pierson, VMO-1